

## **REMARKS**

Claims 1 and 28 are amended. Claims 1-18 and 28-47 are pending in the application.

In the Response to Arguments section at page 2 of the present Action, the Examiner indicates that the term “selectively” is broad and does limit the claim based upon what it selects for or against. Without admission as to the propriety of the Examiner’s statements, 1 and 28 are amended to adopt the Examiner’s suggested terminology “select for removal of”. Claim 1 is amended to recite exposing the substrate to a third gaseous substance effective to select for removal of the reaction product relative to a second species monolayer. Claim 28 is amended to recite exposing the substrate to a gaseous substance “c” effective to select for removal of undesired impurity relative to a second species monolayer in claim 29. Accordingly, the claims are clearly limited to what the gas selects for and against.

In the Response to the Arguments section the Examiner additionally indicates that claims 16-18 recite inherent features of the first gas. Applicant notes, however, that the relative absorbance of a first gaseous precursor during chemisorbing will depend at least in part upon the particular gaseous precursor being utilized. Since the degree of preferential absorbance to a substrate rather than a second species monolayer may differ for first gaseous precursors, the Examiner’s holding of inherency is improper.

Claims 1-18 and 28-47 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over the Background section of applicant’s specification as combined with Brabant (U.S. Patent Application Publication No. 2003/0036268). The Examiner is reminded by direction to MPEP § 2143 that a proper obviousness rejection has the

following three requirements: 1) there must be some suggestion or motivation to modify or combine reference teachings; 2) there must be a reasonable expectation of success; and 3) the combined references must teach or suggest all of the claim limitations. Claims 1-18 and 28-47 are allowable over Brabant in view of applicant's Background section for at least the reason that Brabant and the Background section, considered in individually or in combination, fail to disclose or suggest each and every element in any of those claims, fail to provide motivation for combination and fail to provide a basis for a reasonable expectation of success.

As amended, independent claim 1 recites chemisorbing a first species monolayer onto a substrate, where the first species monolayer is discontinuously formed. Claim 1 further recites exposing the substrate to a gaseous second precursor to form a second species monolayer and a reaction product of the second precursor with the substrate material not covered by the first species monolayer. Claim 1 additionally recites exposing the substrate to a third gaseous substance which differs from the first and second precursors effective to select for removal of the reaction product from the substrate relative to the second species monolayer without depositing material onto the substrate. The amendment to claim 1 is supported by the specification at, for example, Fig. 3 and the text at page 13, lines 14-18. The Background section of applicant's specification does not disclose or suggest any methodology for removal of reaction product from the substrate after formation of the reaction product utilizing a second precursor. Nor does the Background section disclose or suggest the claim 1 recited utilization of a third gaseous substance during a material forming methodology where the third gaseous substance is exposed to a substrate effective to remove material without depositing material onto the

substrate.

Brabant discloses a pre-deposition processing utilizing HF to remove all oxides from a surface. Such disclosure does not teach or suggest the claim 1 recited method of forming a material where deposited material is exposed to a third gaseous substance effective to select for removal of a reaction product from the substrate relative to a second species monolayer. The Examiner indicates reliance upon Brabant because Brabant teaches that removing the substrate oxide by flowing HF over the substrate increases purity in ALD processes. However, Brabant specifically indicates a goal of producing an oxide-free surface. Such disclosure teaches away from the claim 1 recited selective removal since based upon Brabant one would expect complete oxide removal rather selective oxide removal as depicted in Fig. 3 of applicant's specification and described in the accompanying text. Accordingly, not only does Brabant fail to contribute toward suggesting the claim 1 recited exposing the substrate to a third gaseous substance effective to select for removal of a reaction product relative to a second species of monolayer, when considered in combination with the Background section of applicant's specification, such additionally fails to provide a reasonable expectation of successful achievement of the recited selective removal. Nor does Brabant address the issue of selective removal of a reaction product while retaining additional chemisorbed material and therefore does not provide motivation for combination.

In addition to the above, the Background section and Brabant, considered individually or in combination, fails to disclose or suggest the claim 1 recited providing of a third gaseous substance during a method of forming a material where the third gaseous substance selectively removes a reaction product without depositing material onto the

substrate. Accordingly, the combination of applicant's Background and Brabant fails to disclose or suggest each and every element in claim 1, fails to provide motivation for combination and fails to provide a reasonable expectation of success. Therefore a *prima facie* case has not been established and claim 1 is allowable over the combination of applicant's Background and Brabant.

With respect to claim 28, as amended such recites chemisorbing a first species monolayer from a gaseous precursor "a", exposing the substrate to a gaseous precursor "b", and exposing the substrate to a gaseous substance "c" effective to select for removal of undesired impurity from the substrate relative to the second species monolayer without depositing material onto the substrate. Independent claim 28 is allowable over the combination of applicant's Background and Brabant for at least reasons similar to those discussed above with respect to independent claim 1.

Dependent claims 2-18 and 29-47 are allowable over the combination of applicant's Background section and Brabant for at least the reason that they depend from corresponding allowable base claims 1 and 28.

For the reasons discussed above, claims 1-18 and 28-47 are allowable. Accordingly, applicant respectfully requests formal allowance of such pending claims in the Examiner's next action.

Respectfully submitted,

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